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Amendment under 37 C.F.R. §1.114
Serial No. 10/542,065
Attorney Docket No. 052780

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1.-6. Cancelled.

7. (Currently amended): A manufacturing method for a broad band cholesteric liquid crystal film comprising steps of: polymerizing a liquid crystal mixture that is free of an ultraviolet absorbent, containing a polymerizable mesogen compound (a), a polymerizable chiral agent (b) and a photopolymerization initiator (c) between two substrates with ultraviolet light having an intensity of 0.1 to 20mW/cm², wherein

the two substrates are made of the same material,

the broad band cholesteric liquid crystal film has a reflection bandwidth of [[200]] 300 nm or more,

a pitch length in the cholesteric liquid crystal film changes so as to narrow continuously from a side irradiated with ultraviolet light, and

the pitch length is changed such that the difference in pitch length between the side of ultraviolet light irradiation and the opposite side is made at least 100 nm.

8-16. Cancelled.

17. (Previously presented): The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein the polymerizable mesogen compound (a) has one polymerizable functional group and the polymerizable chiral agent (b) has two or more polymerizable functional groups.

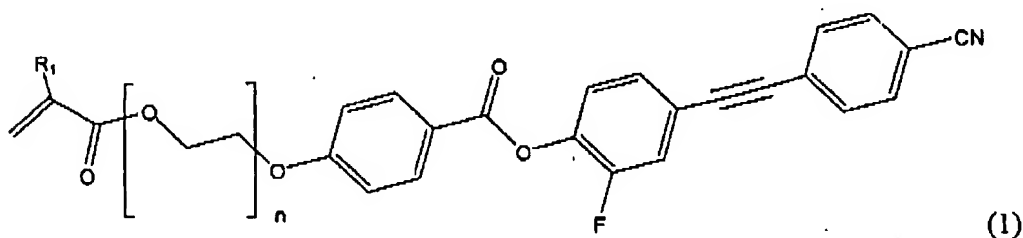
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18 (Previously presented): The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein the molar absorption coefficient of the polymerizable mesogen compound (a) is 50 to $500 \text{ dm}^3 \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$ at 365 nm.

19. (Previously presented): The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein the polymerizable mesogen compound (a) is a compound represented by the following general formula (1):



wherein R_1 represents a hydrogen atom or a methyl group, and n is an integer of 1 to 5.

Claim 20 (New). The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein the coating thickness of the liquid crystal mixture is in the range of from 5 to 20 μm .

Claim 21 (New). The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein the polymerization temperature upon ultraviolet light irradiation is 140°C or less.

Claim 22 (New). The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein the irradiation time of ultraviolet light is 5 minutes or less.

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Claim 23 (New). The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein a mixing amount of the polymerizable chiral agent (b) is in the range of from 3 to 7 parts by weight relative to 100 parts by weight of a total amount of the polymerizable mesogen compound (a) and the polymerizable chiral agent (b).

Claim 24 (New). The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein a mixing amount of the photopolymerization initiator (c) is in the range of from 0.01 to 10 parts by weight relative to 100 parts by weight of a total amount of the polymerizable mesogen compound (a) and the polymerizable chiral agent (b).

Claim 25 (New). The manufacturing method for a broad band cholesteric liquid crystal film according to claim 7, wherein a mixing amount of the photopolymerization initiator (c) is in the range of from 0.05 to 5 parts by weight relative to 100 parts by weight of a total amount of the polymerizable mesogen compound (a) and the polymerizable chiral agent (b).